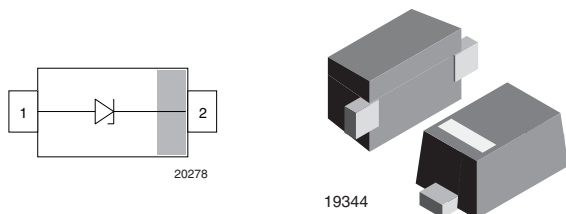


## Single-Line ESD-Protection Diode in SOD-523



### MARKING (example only)



Bar = cathode marking

X = date code

Y = type code (see table below)

### FEATURES

- Compact SOD-523 package
- Low package height < 0.7 mm
- 1-line unidirectional ESD-protection
- AEC-Q101 qualified available
- Working range 1 V to 33 V
- ESD immunity acc. IEC 61000-4-2  
±15 kV to ±30 kV contact discharge  
±15 kV to ±30 kV air discharge
- Lead plating: Sn (e3)  
- soldering can be checked by standard vision inspection  
- AOI = Automated Optical Inspection
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### DESIGN SUPPORT TOOLS click logo to get started



| ORDERING INFORMATION     |                       |                                                    |            |                               |                            |
|--------------------------|-----------------------|----------------------------------------------------|------------|-------------------------------|----------------------------|
| PART NUMBER<br>(EXAMPLE) | AEC-Q101<br>QUALIFIED | ENVIRONMENTAL AND QUALITY CODE                     |            |                               | ORDERING CODE<br>(EXAMPLE) |
|                          |                       | RoHS COMPLIANT +<br>LEAD (Pb)-FREE<br>TERMINATIONS | TIN PLATED | 8K PER 7" REEL<br>(8 mm TAPE) |                            |
|                          |                       | GREEN                                              |            | MOQ = 8K/BOX                  |                            |
| VESD05C1-02V             | -                     | G                                                  | 3          | -08                           | VESD05C1-02V-G3-08         |
| VESD05C1-02V             | H                     | G                                                  | 3          | -08                           | VESD05C1-02VHG3-08         |

| PACKAGE DATA  |              |           |         |                                         |                                      |                              |
|---------------|--------------|-----------|---------|-----------------------------------------|--------------------------------------|------------------------------|
| DEVICE NAME   | PACKAGE NAME | TYPE CODE | WEIGHT  | MOLDING COMPOUND<br>FLAMMABILITY RATING | MOISTURE<br>SENSITIVITY LEVEL        | SOLDERING CONDITIONS         |
| VESD01C1-02V  | SOD-523      | . V       | 1.32 mg | UL 94 V-0                               | MSL level 1<br>(according J-STD-020) | Peak temperature max. 260 °C |
| VESD03C1-02V  |              | . B       |         |                                         |                                      |                              |
| VESD05C1-02V  |              | . C       |         |                                         |                                      |                              |
| VESD08C1-02V  |              | . D       |         |                                         |                                      |                              |
| VESD012C1-02V |              | . E       |         |                                         |                                      |                              |
| VESD016C1-02V |              | . G       |         |                                         |                                      |                              |
| VESD026C1-02V |              | . X       |         |                                         |                                      |                              |
| VESD033C1-02V |              | A         |         |                                         |                                      |                              |

**ABSOLUTE MAXIMUM RATINGS VESD01C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 14.6        | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 30          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 30          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD03C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 11.6        | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 30          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 30          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD05C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 8.7         | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 30          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 30          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD08C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 6.60        | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 30          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 30          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD12C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 4.4         | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 30          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 30          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD16C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 3.6         | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 30          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 30          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD26C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 2.1         | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 20          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 20          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ABSOLUTE MAXIMUM RATINGS VESD33C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER             | TEST CONDITIONS                                 | SYMBOL           | VALUE       | UNIT |
|-----------------------|-------------------------------------------------|------------------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 µs/single shot         | I <sub>PPM</sub> | 1.6         | A    |
| Peak pulse power      | Acc. IEC 61000-4-5, 8/20 µs/single shot         | P <sub>PP</sub>  | 100         | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses | V <sub>ESD</sub> | 15          | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses     |                  | 15          | kV   |
| Operating temperature | Junction temperature                            | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature   |                                                 | T <sub>stg</sub> | -55 to +150 | °C   |

**ELECTRICAL CHARACTERISTICS VESD01C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                                | SYMBOL               | MIN. | TYP. | MAX. | UNIT  |
|---------------------------|--------------------------------------------------------------------------|----------------------|------|------|------|-------|
| Protection paths          | Number of lines which can be protected                                   | N <sub>channel</sub> | -    | -    | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                             | V <sub>RWM</sub>     | -    | -    | 1    | V     |
| Reverse voltage           | at I <sub>R</sub> = 100 µA                                               | V <sub>R</sub>       | 1    | 1.2  | -    | V     |
| Reverse current           | at V <sub>R</sub> = 1 V                                                  | I <sub>R</sub>       | -    | 20   | 100  | µA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 20 mA                                                | V <sub>BR</sub>      | 2.5  | 2.65 | 2.8  | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 14.6 A, t <sub>p</sub> = 8/20 µs | V <sub>C</sub>       | -    | 6.2  | 6.9  | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 µs                        | V <sub>F</sub>       | 0.9  | 1.1  | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 14.6 A, t <sub>p</sub> = 8/20 µs | V <sub>F</sub>       | -    | 3    | 3.92 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                   | r <sub>dyn</sub>     | -    | 0.13 | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                       | C <sub>D</sub>       | 153  | 192  | 230  | pF    |

**ELECTRICAL CHARACTERISTICS VESD03C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                                | SYMBOL               | MIN. | TYP. | MAX. | UNIT  |
|---------------------------|--------------------------------------------------------------------------|----------------------|------|------|------|-------|
| Protection paths          | Number of lines which can be protected                                   | N <sub>channel</sub> | -    | -    | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                             | V <sub>RWM</sub>     | -    | -    | 3    | V     |
| Reverse voltage           | at I <sub>R</sub> = 20 µA                                                | V <sub>R</sub>       | 3    | -    | -    | V     |
| Reverse current           | at V <sub>R</sub> = 3 V                                                  | I <sub>R</sub>       | -    | 8    | 20   | µA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                 | V <sub>BR</sub>      | 4.4  | 4.65 | 4.9  | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 11.6 A, t <sub>p</sub> = 8/20 µs | V <sub>C</sub>       | -    | 7.8  | 8.70 | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 µs                        | V <sub>F</sub>       | 0.9  | 1.1  | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 11.6 A, t <sub>p</sub> = 8/20 µs | V <sub>F</sub>       | -    | 2.6  | 3.32 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                   | r <sub>dyn</sub>     | -    | 0.19 | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                       | C <sub>D</sub>       | 89   | 112  | 135  | pF    |

**ELECTRICAL CHARACTERISTICS VESD05C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                               | SYMBOL               | MIN. | TYP. | MAX. | UNIT  |
|---------------------------|-------------------------------------------------------------------------|----------------------|------|------|------|-------|
| Protection paths          | Number of lines which can be protected                                  | N <sub>channel</sub> | -    | -    | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                            | V <sub>RWM</sub>     | -    | -    | 5    | V     |
| Reverse voltage           | at I <sub>R</sub> = 1 µA                                                | V <sub>R</sub>       | 5    | -    | -    | V     |
| Reverse current           | at V <sub>R</sub> = 5 V                                                 | I <sub>R</sub>       | -    | 0.01 | 0.1  | µA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                | V <sub>BR</sub>      | 6.85 | 7.26 | 7.65 | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 8.7 A, t <sub>p</sub> = 8/20 µs | V <sub>C</sub>       | -    | 10.3 | 11.5 | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 µs                       | V <sub>F</sub>       | 0.9  | 1.1  | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 8.7 A, t <sub>p</sub> = 8/20 µs | V <sub>F</sub>       | -    | 2.2  | 2.74 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                  | r <sub>dyn</sub>     | -    | 0.2  | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                      | C <sub>D</sub>       | 53   | 67   | 81   | pF    |

**ELECTRICAL CHARACTERISTICS VESD08C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                               | SYMBOL               | MIN. | TYP. | MAX. | UNIT  |
|---------------------------|-------------------------------------------------------------------------|----------------------|------|------|------|-------|
| Protection paths          | Number of lines which can be protected                                  | N <sub>channel</sub> | -    | -    | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                            | V <sub>RWM</sub>     | -    | -    | 8    | V     |
| Reverse voltage           | at I <sub>R</sub> = 0.1 µA                                              | V <sub>R</sub>       | 8    | -    | -    | V     |
| Reverse current           | at V <sub>R</sub> = 8 V                                                 | I <sub>R</sub>       | -    | 0.01 | 0.1  | µA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                | V <sub>BR</sub>      | 9.5  | 10   | 10.5 | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 6.6 A, t <sub>p</sub> = 8/20 µs | V <sub>C</sub>       | -    | 13.7 | 15.3 | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 µs                       | V <sub>F</sub>       | 0.9  | 1.1  | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 6.6 A, t <sub>p</sub> = 8/20 µs | V <sub>F</sub>       | -    | 1.9  | 2.32 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                  | r <sub>dyn</sub>     | -    | 0.23 | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                      | C <sub>D</sub>       | 37   | 47   | 57   | pF    |

**ELECTRICAL CHARACTERISTICS VESD12C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                               | SYMBOL               | MIN. | TYP. | MAX. | UNIT  |
|---------------------------|-------------------------------------------------------------------------|----------------------|------|------|------|-------|
| Protection paths          | Number of lines which can be protected                                  | N <sub>channel</sub> | -    | -    | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                            | V <sub>RWM</sub>     | -    | -    | 12   | V     |
| Reverse voltage           | at I <sub>R</sub> = 0.1 µA                                              | V <sub>R</sub>       | 12   | -    | -    | V     |
| Reverse current           | at V <sub>R</sub> = 12 V                                                | I <sub>R</sub>       | -    | 0.01 | 0.1  | µA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                | V <sub>BR</sub>      | 13.9 | 14.7 | 15.5 | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 4.4 A, t <sub>p</sub> = 8/20 µs | V <sub>C</sub>       | -    | 20.5 | 22.7 | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 µs                       | V <sub>F</sub>       | 0.9  | 1.1  | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 4.4 A, t <sub>p</sub> = 8/20 µs | V <sub>F</sub>       | -    | 1.6  | 1.88 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                  | r <sub>dyn</sub>     | -    | 0.4  | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                      | C <sub>D</sub>       | 26   | 33   | 40   | pF    |

**ELECTRICAL CHARACTERISTICS VESD16C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                               | SYMBOL               | MIN. | TYP. | MAX. | UNIT  |
|---------------------------|-------------------------------------------------------------------------|----------------------|------|------|------|-------|
| Protection paths          | Number of lines which can be protected                                  | N <sub>channel</sub> | -    | -    | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                            | V <sub>RWM</sub>     | -    | -    | 16   | V     |
| Reverse voltage           | at I <sub>R</sub> = 0.1 µA                                              | V <sub>R</sub>       | 16   | -    | -    | V     |
| Reverse current           | at V <sub>R</sub> = 16 V                                                | I <sub>R</sub>       | -    | 0.01 | 0.1  | µA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                | V <sub>BR</sub>      | 17   | 17.9 | 18.8 | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 3.6 A, t <sub>p</sub> = 8/20 µs | V <sub>C</sub>       | -    | 25.3 | 28   | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 µs                       | V <sub>F</sub>       | 0.9  | 1.1  | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 3.6 A, t <sub>p</sub> = 8/20 µs | V <sub>F</sub>       | -    | 1.5  | 1.72 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                  | r <sub>dyn</sub>     | -    | 0.53 | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                      | C <sub>D</sub>       | 21   | 27   | 33   | pF    |

**ELECTRICAL CHARACTERISTICS VESD26C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                               | SYMBOL               | MIN. | TYP.   | MAX. | UNIT  |
|---------------------------|-------------------------------------------------------------------------|----------------------|------|--------|------|-------|
| Protection paths          | Number of lines which can be protected                                  | N <sub>channel</sub> | -    | -      | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                            | V <sub>RWM</sub>     | -    | -      | 26   | V     |
| Reverse voltage           | at I <sub>R</sub> = 0.1 μA                                              | V <sub>R</sub>       | 26   | -      | -    | V     |
| Reverse current           | at V <sub>R</sub> = 26 V                                                | I <sub>R</sub>       | -    | < 0.01 | 0.1  | μA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                | V <sub>BR</sub>      | 27.6 | 29.1   | 30.6 | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 2.1 A, t <sub>p</sub> = 8/20 μs | V <sub>C</sub>       | -    | 43     | 48   | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 μs                       | V <sub>F</sub>       | 0.9  | 1.1    | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 2.1 A, t <sub>p</sub> = 8/20 μs | V <sub>F</sub>       | -    | 1.3    | 1.42 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                  | r <sub>dyn</sub>     | -    | 1.9    | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                      | C <sub>D</sub>       | 14   | 17.5   | 21   | pF    |

**ELECTRICAL CHARACTERISTICS VESD33C1-02V**(T<sub>amb</sub> = 25 °C, unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS / REMARKS                                               | SYMBOL               | MIN. | TYP.   | MAX. | UNIT  |
|---------------------------|-------------------------------------------------------------------------|----------------------|------|--------|------|-------|
| Protection paths          | Number of lines which can be protected                                  | N <sub>channel</sub> | -    | -      | 1    | lines |
| Reverse stand off voltage | Max. reverse working voltage                                            | V <sub>RWM</sub>     | -    | -      | 33   | V     |
| Reverse voltage           | at I <sub>R</sub> = 0.1 μA                                              | V <sub>R</sub>       | 33   | -      | -    | V     |
| Reverse current           | at V <sub>R</sub> = 33 V                                                | I <sub>R</sub>       | -    | < 0.01 | 0.1  | μA    |
| Reverse breakdown voltage | at I <sub>R</sub> = 1 mA                                                | V <sub>BR</sub>      | 35.5 | 37.4   | 39.3 | V     |
| Reverse clamping voltage  | at I <sub>PP</sub> = I <sub>PPM</sub> = 1.6 A, t <sub>p</sub> = 8/20 μs | V <sub>C</sub>       | -    | 56     | 62.5 | V     |
| Forward clamping voltage  | at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 μs                       | V <sub>F</sub>       | 0.9  | 1.1    | 1.2  | V     |
|                           | at I <sub>PP</sub> = I <sub>PPM</sub> = 1.6 A, t <sub>p</sub> = 8/20 μs | V <sub>F</sub>       | -    | 1.22   | 1.32 | V     |
| Dynamic resistance        | t <sub>p</sub> = 100 ns (TLP; pin 2-1)                                  | r <sub>dyn</sub>     | -    | 3.6    | -    | Ω     |
| Capacitance               | at V <sub>R</sub> = 0 V; f = 1 MHz                                      | C <sub>D</sub>       | 12   | 15     | 18   | pF    |

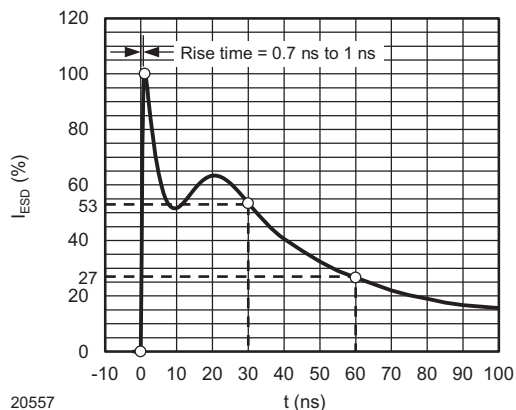


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330  $\Omega$  / 150 pF)

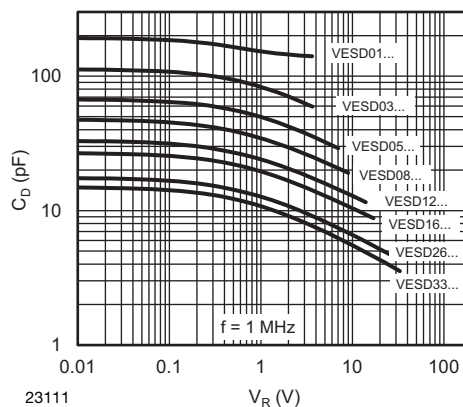


Fig. 4 - Typical Capacitance vs. Reverse Voltage

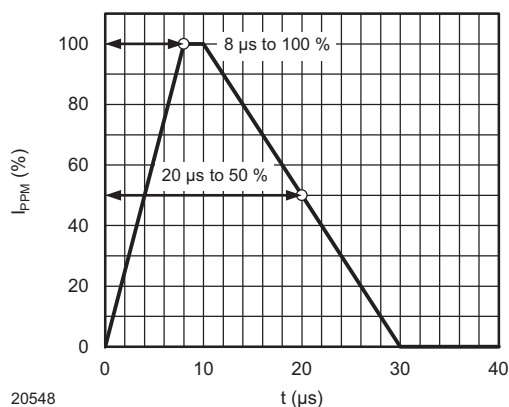


Fig. 2 - 8/20  $\mu$ s Peak Pulse Current Wave Form acc. IEC 61000-4-5

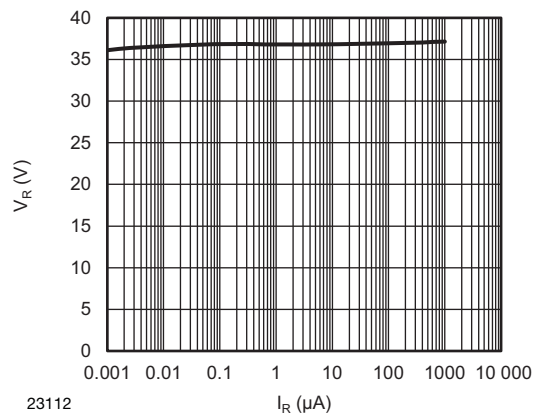


Fig. 5 - Typical Reverse Voltage vs. Reverse Current

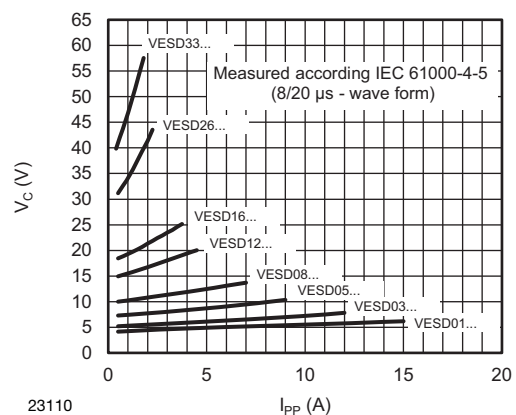


Fig. 3 - Typical Peak Clamping Voltage vs. Peak Pulse Current

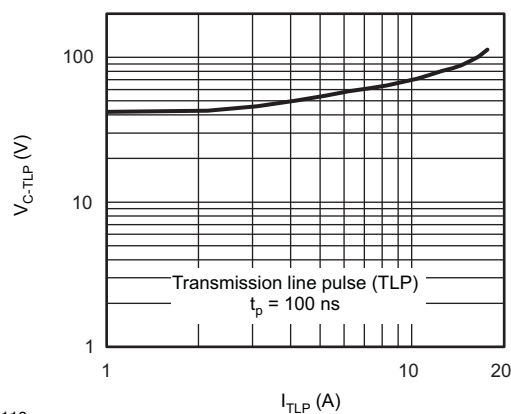


Fig. 6 - Typical Clamping Voltage vs. Peak Pulse Current

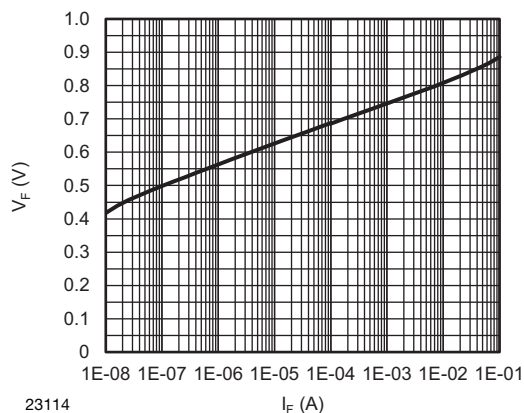


Fig. 7 - Typical Forward Voltage vs. Forward Current

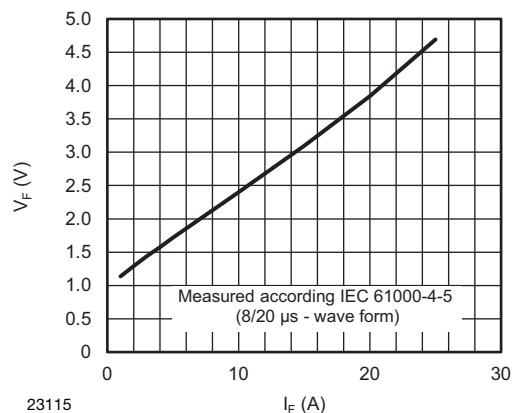
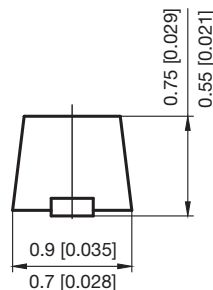
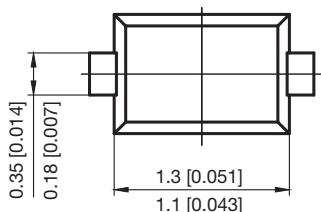
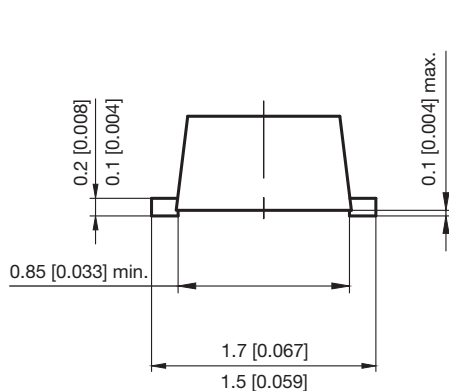
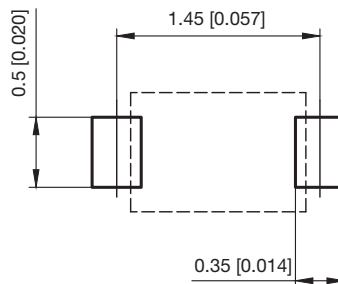


Fig. 8 - Typical Forward Voltage vs. Forward Current

## PACKAGE DIMENSIONS in millimeters (Inches): SOD-523



foot print recommendation:



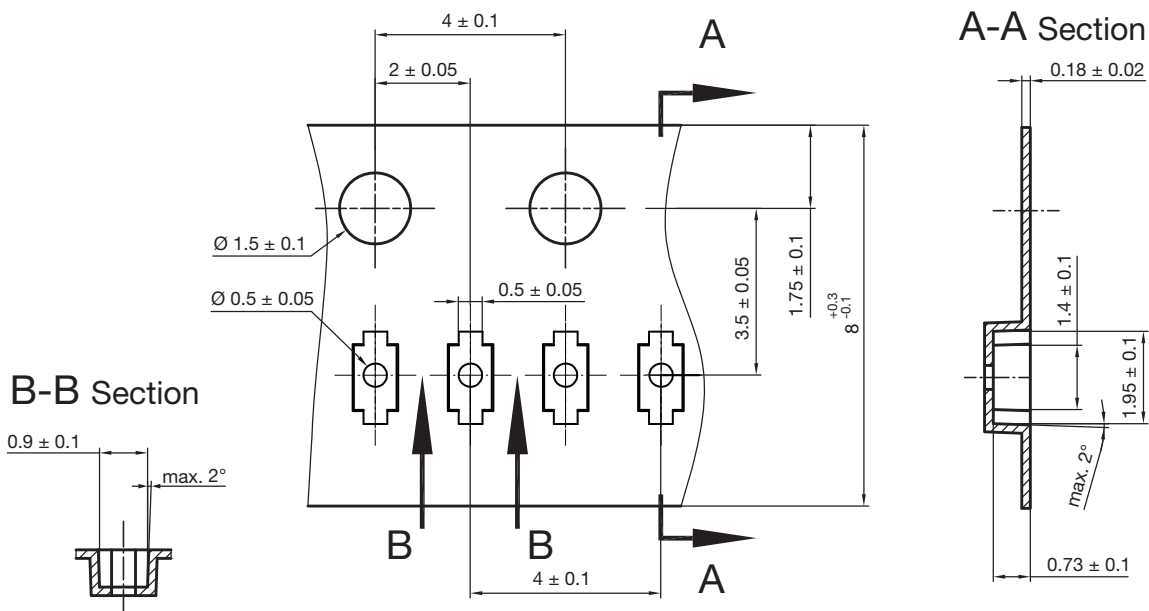
Document no.: S8-V-3880.02-003 (4)

Rev.2 - Date: 18. Aug. 2017

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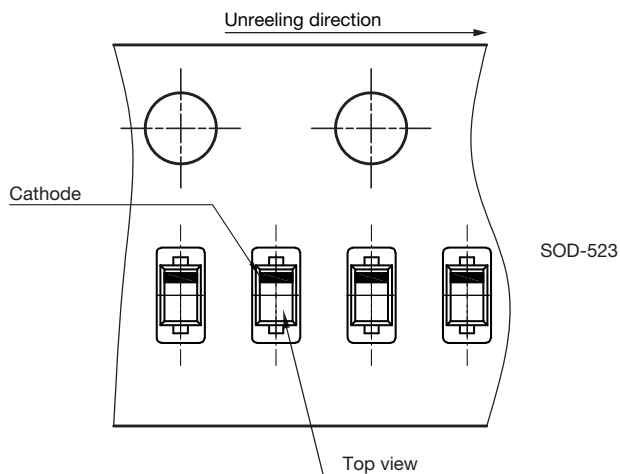


**CARRIER TAPE SOD-523**



S8-V-3717.03-005 (4)  
05.07.2018  
22959

**ORIENTATION IN CARRIER TAPE SOD-523**



S8-V-3717.03-006 (4)  
05.07.2018  
22958



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